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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/670,917	09/24/2003	Volker Haerle	12406-055001	6535
26181	7590	10/04/2005	EXAMINER	
FISH & RICHARDSON P.C. PO BOX 1022 MINNEAPOLIS, MN 55440-1022			COLON, GERMAN	
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Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/670,917	<b>Applicant(s)</b> HAERLE ET AL.	
	<b>Examiner</b> German Colón	<b>Art Unit</b> 2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 24 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 17-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/5/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of Group I (claims 1-16) in the reply filed on July 14, 2005 is acknowledged.

### ***Response to Preliminary Amendment***

2. The Pre-Amendment, filed on September 24, 2003, has been entered and acknowledged by the Examiner.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 6 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Kawasaki et al. (US 6,563,174).

Regarding claim 1, Kawasaki discloses a display device (see Figs. 8-9 and Col. 11, lines 8-9) comprising:

a first array of individual display elements 8 (see Col. 5, line 27); and

a second array of control transistors (TFT) for the display element, wherein the TFTs include a semiconductor material 5 with a band gap sufficiently large to be transparent in the visible spectral range (see Col. 5, lines 33-35).

Regarding claim 6, Kawasaki discloses the semiconductor material of the TFT includes ZnO (see at least Col. 5, lines 33-35).

Regarding claim 15, Kawasaki discloses each TFT controlling one of the individual display elements (see Fig. 9 and Col. 11, lines 29-31).

5. Claims 1, 4-7 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Chiu (US 5,989,752).

Referring to claim 1, Chiu discloses a display device (see at least Figs. 1 and 14) comprising:

a first array of individual display elements (see Fig. 11 and 14, and respective description); and

a second array of control transistors (TFT) for the display element (see at least Figs. 1 and 4H-4J), wherein the TFTs include a semiconductor material with a band gap sufficiently large to be transparent in the visible spectral range (see Col. 8, lines 4-7 and 40-41).

Referring to claim 4, Chiu discloses the display elements including liquid crystal elements (see at least Col. 5, line 4-5).

Referring to claim 5, Chiu discloses the band gap of the semiconductor material of the TFT being larger than 3 eV (see Col. 8, lines 4-7).

Referring to claim 6, Chiu discloses the semiconductor material of the TFT including one or more of GaAlN and diamond.

Referring to claim 7, Chiu discloses the TFT being formed in one or more thin layers of semiconductor material.

Referring to claim 15, Chiu discloses each TFT controlling one of the individual display elements (see Figs. 1, 11 and 14, and respective description).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 8 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiu (US 5,989,752).

In regards to claim 8, Chiu discloses the claimed invention except for the limitation of the semiconductor layer having a thickness in the range of 0.5  $\mu\text{m}$  to 20  $\mu\text{m}$ .

However, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering an optimum or workable thickness, i.e. a change in size, involves only routine skill in the art. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a thickness in the range of 0.5  $\mu\text{m}$  to 20  $\mu\text{m}$ , since such a modification would have involved a mere change in the shape of a component.

In regards to claim 16, Chiu discloses the claimed invention except for the limitation of the TFT controlling several display elements.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a TFT which controls either one or a plurality of display elements (pixels) according to the preferred method of driving the display, which is considered to be within the level of ordinary skill in the art. Further, one of ordinary skill in the art would entertain the idea of controlling a plurality of pixels with a single TFT when a whole image is intended to be displayed instead of a single pixel.

8. Claims 1-3 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada (US 6,246,179) in view of Kawasaki et al. (US 6,727,522).

Regarding claims 1 and 2, Yamada discloses a display device (see Figs. 3-8) comprising:  
a first array of individual organic EL display elements (see Fig. 3); and  
a second array of control transistors (TFT) for the display element (see at least Fig. 4).  
Yamada is silent regarding the TFT comprising a semiconductor material with a band gap sufficiently large to be transparent in the visible spectral range.

However, in the same field of endeavor, Kawasaki discloses a transistor device for an electroluminescent display (see at least Figs. 1-2; and Col. 2, lines 3-5) comprising an array of control transistors (TFT) for the display element, wherein the TFT includes a semiconductor material with a band gap sufficiently large to be transparent in the visible spectral range (see at least Col. 1, lines 54-57; and Col. 3, lines 33-35) with the purpose of removing the necessity of forming a light shielding layer over the TFT components, resulting in an increase in the light-

Art Unit: 2879

emissive area of a display (see at least Col. 1, lines 64-67). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the TFT disclosed by Kawasaki in the EL device of Yamada, in order to remove the necessity of forming a light shielding layer over the TFT components, resulting in an increase in the light-emissive area of a display.

Regarding claim 3, Yamada discloses the organic EL element including a cathode **67**, an ETL **65**, an organic light emitting layer **64**, a HTL **63** and an anode **61**.

Regarding claim 9, Yamada discloses the array of display elements containing multiple sub-arrays, each sub-array configured for showing various colors (see Fig. 3 and respective description).

Referring to claim 10, Yamada discloses each sub-array configured for showing R, G and B (see Fig. 3).

Referring to claim 11, Yamada discloses the multiple sub-array being disposed in the same plane on a carrier substrate (see Fig. 4B in view of Fig. 3).

9. Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada-Kawasaki as applied to claim 9 above, and further in view of Forrest et al. (US 2001/0000005).

In regards to claim 12, Yamada-Kawasaki discloses the claimed invention except for the limitation of the sub-arrays being disposed in stacked layers in multiple planes. Yamada-Kawasaki exemplifies the sub-arrays in a same plane.

However, in the same field of endeavor, Forrest discloses an organic EL display having stacked layers in multiple planes with the purpose of providing a high definition multicolor

Art Unit: 2879

display which is highly reliable, compact, efficient and requires low drive voltages (see at least paragraphs [0014] and [0016]. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the sub-arrays in stacked layers in multiple planes, in order to provide a high definition multicolor display which is highly reliable, compact, efficient and requires low drive voltages.

In regards to claim 13, Yamada-Kawasaki-Forrest discloses the sub-arrays being disposed on its own carrier substrate (see '005, Fig. 14A).

In regards to claim 14, Yamada-Kawasaki-Forrest discloses the carrier substrate 50 being made of glass.

#### ***Prior Art of Record***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Iwata et al. ('846), Forbes et al. ('907) and Haga ('308) disclose a TFT comprising a transparent semiconductor material.

#### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to German Colón whose telephone number is 571-272-2451. The examiner can normally be reached on Monday thru Thursday, from 8:30 to 6:00.



Art Unit: 2879

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on 571-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
gc

  
**KARABI GUHARAY**  
**PRIMARY EXAMINER**